Lydia A. Finney

X-ray Sciences and Biosciences Divisions
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EXPERIENCE

2007-present **ADVANCED PHOTON SOURCE, ARGONNE NATIONAL LABORATORY** *Argonne, Ilinois.*
Assistant Physicist and Biochemist. Working to enhance the biochemical context of x-ray fluorescence imaging of cells, bridging our ability to identify changes in the cellular distribution of metal ions with the indentification of linked macromolecular pathways. Continuing research into the roles of copper in angiogenesis, zinc in stem cell differentiation and developing metalloproteomics techniques through a joint appointment with the Biosciences division, as well as working to make x-ray fluorescence imaging more accessible through user support to my community, and communicate to them the revolutionary nature of this technique.

2005-2007 **ARGONNE NATIONAL LABORATORY** *Argonne, Ilinois.*
Postdoctoral Fellow in Functional Metalloproteomics. Investigated the changes in cellular metal ion distribution associated with several morphogenic processes via cell culture and immunofluorescent microscopy techniques. Initiated development of new techniques for using X-ray fluorescence to identify metalloproteins involved in these processes via proteomics techniques such as 2D gel electrophoresis.

1999-2005 **NORTHWESTERN UNIVERSITY** *Evanston, Illinois*
Graduate Assistant Studied the structure and function of metal-ion homeostasis proteins with Dr. Thomas V. O'Halloran, involving protein expression and purification, site-directed mutagenesis, electrophoresis, FPLC, HPLC, MALDI-TOF MS, ICP-AES, UV-Vis and fluorescence spectroscopy, and air sensitive techniques. Extensive teaching experience.

1998-1999 **MICHIGAN STATE UNIVERSITY** *East Lansing, Michigan*
Research Assistant Investigated properties of non-heme-iron small molecule model complexes under Dr. J. B. Broderick.

1996-1998 **STATE UNIVERSITY OF NEW YORK AT ALBANY** *Albany, New York*
Engaged in independent research in bioinorganic chemistry under Dr. W. E. Broderick.

EDUCATION

2005 **NORTHWESTERN UNIVERSITY** *Evanston, Illinois*
Ph.D. in Inorganic Chemistry under Dr. Thomas. V. O'Halloran. (3.78/4.00 GPA).

1998 **STATE UNIVERSITY OF NEW YORK AT ALBANY** *Albany, New York*
B.S. in Chemistry with Mathematics minor (3.99/4.00 GPA).

1995 **G. RAY BODLEY HIGH SCHOOL** *Fulton, New York*
Valedictorian.

HONORS

2002 **Elected as an Associate Member to Sigma Xi.**

1999 **John and Fannie Hertz Graduate Fellowship**

National Science Foundation Graduate Fellowship Honorable Mention.
American Institute of Chemists Foundation Student award.

1998 **National Science Foundation Research Experience for Undergraduates Scholarship**

1997 **Barry M. Goldwater Scholar**
State University of New York Chancellor's Award for Academic Excellence

1996 **CRC Press Freshman Chemistry Award**

1995 **Robert C. Byrd Scholar** State of New York.
University Honors Scholarship State University of New York at Albany.

PROFESSIONAL DEVELOPMENT AND AFFILIATIONS

- **American Chemical Society** Affiliate.
- **Phi Beta Kappa** Member.
- **Sigma Xi.** Associate Member.

PUBLICATIONS

Finney, L., Chishti, Y., Khare, T., Giometti, C., and Vogt, S. X-ray Fluorescence Imaging Paired with Electrophoresis for High-Throughput Metalloproteomics. **Biotechniques**. *In preparation.*

Finney, L., Vogt, S., Fukai, T. and Glesne, D. Copper and Angiogenesis: Unraveling a relationship key to cancer progression. **Clinical and Experimental Pharmacology and Physiology**. *Invited review, published as OnlineEarly article May 25, 2008.*

Finney, L., Mandavi, S., Ursos, L. Zhang, W., Rodi, D., Vogt, S., Legnini, D., Maser, J., Ikpatt, F., Olufunmilayo, O., and Glesne, D. **X-Ray Fluorescence Microscopy Reveals Large-scale Relocalization and Extracellular Transport of Cellular Copper During Angiogenesis.** PNAS**, 2007,** 104, 7, 2247-2252.

Finney, L.A., O'Halloran, T.V. **Transition Metal Speciation in the Cell: Insights from the Chemistry of Metal Ion Receptors** Science 2003, *300,* 931-936.

Wernimont, A.K., Huffman, D.L., Finney, L.A., Demeler, B., O'Halloran, T.V., Rosenzweig, A.C. **Crystal structure and dimerization equilibria of PcoC, a methionine rich copper resistance protein from *Escherichia coli*.** J. Biol. Inorg. Chem. 2003, *8*, 185-194.

Banci, L. Bertini, I., Ciofi-Baffoni, S., Finney, L. A., Outten, C. E., and O'Halloran, T. V. **A new zinc protein coordination site in an intracellular metal-trafficking protein: Solution structure of the apo and Zn(II) forms of ZntA(46-118)**. J. Mol. Biol., 2002, *323*, 883-897.

Huffmann, D. L., Huyett, J., Outten, F. W., Doan, P. E., Finney, L. A., Hoffman, B. W., and O'Halloran, T. V**. Spectroscopy of Cu(II)-PcoC and the multicopper oxidase function of PcoA, Two Essential components of *Escherichia coli pco* copper resistance operon.** Biochemistry, *41*, (31), pp 10046 – 10055.

POSTERS AND PRESENTATIONS

2008 **8th Siena Meeting: From Genome to Proteome: Proteome Completion.** August 31-September 4th. "High-Throughput Metalloproteomics: X-ray Imaging Paired with Electrophoresis". **Oral Presentation**.

6th International Society for Stem Cell Research Meeting. June 11-15th, 2008. Philadelphia, PA. "Elemental Imaging of Human Embryonic Stem Cells". **Poster.**

APS User Meeting. May 5-9, 2008. Argonne, IL. "A Path to High-Throughput Metalloproteomics through X-ray Fluorescence Imaging Paired with Electrophoresis". **Poster.**

APS User Meeting. May 5-9, 2008. Argonne, IL. "Elemental Imaging of Human Embryonic Stem Cells". **Poster.**

Biosciences Division Seminar. January 24, 2008. Argonne, IL. "Metalloproteomics: X-ray Imaging of the Multi-Dimensional Proteome". **Invited Presentation.**

2007 **Biological Applications of X-ray Microprobes**, November 15-16, 2007, Northwestern University, Chicago, IL. "Tracking metals from the womb to the grave: elemental dynamics of stem cell differentiation and angiogenesis". **Invited Presentation**.

X-ray Science Division Special Seminar, August 3, 2007, Argonne, IL. "Elemental Imaging of Dynamic Events in Cell Biology: the Unique Vision of XRF". **Invited Presentation.**

Gordon Research Conference: Cell Biology of Metals, July 29-August 3, 2007, Newport, RI. "Global Dynamics of Transition Metal Localization in Eukaryotic Cells: X-ray Vision of Life Processes" **Invited Presentation**.

Workshop on STXM and X-ray Nanoprobe Capabilities and Needs for Geo-, Environmental, and Biological Sciences, July 9-10, 2007, Palo Alto, CA. "Elemental Imaging of Dynamic Events in Cell Biology: the Unique Vision of XRF". **Invited Presentation.**

APS User Meeting. May 7-11, 2007. Argonne, IL "Visualizing the Metalloproteome: X-ray Fluorescence Microscopy and Adaptive Proteomic Techniques Reveal Dynamic Picture of Cellular Copper Physiology". **Poster.**

2006 **APS User Science Seminar.** July 28, 2006. Argonne, IL "Global Dynamics of Transition Metal Localization in Eukaryotic Systems". **Invited Presentation.**

2004 **Gordon Research Conference: Graduate Research Seminar: Bioinorganic Chemistry.** January 22-25, 2004. Ventura, CA. "The Chemical Secrets of Metal Trafficking Proteins". **Invited Presentation.**

2003 **17th Symposium of the Protein Society: *Pathways to Human Health***. July 26-30, 2003. Boston, MA. **"**Transition Metal Selectivity: An Emerging Role for Protein-Protein Interactions". Finney, L.A. and O'Halloran, T.V. **Poster.**

2nd Annual Midwest Metals Meeting. May 16-18, 2003. Washington University, St. Louis, MO. "Novel Biological Coordination Chemistry: The Chemical Secrets of Metal Trafficking Proteins". Finney, L.A. and O'Halloran T.V. **Poster.**

2001 **10th International Conference on Bioinorganic Chemistry.** August 26-31, 2001. University of Florence, Florence, Italy. "Unraveling the Mechanism of the Copper Chaperones: What Rules Govern Copper Trafficking in the Cell?. Finney, L.A. and O'Halloran, T.V. **Poster**